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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,737	09/30/2004	Junhua Chang	Q83797	9859

23373 7590 03/07/2006

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WASHINGTON, DC 20037

EXAMINER
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GORMAN, DARREN W

ART UNIT	PAPER NUMBER
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3752

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/509,737	<b>Applicant(s)</b> CHANG, JUNHUA	
	<b>Examiner</b> Darren W. Gorman	<b>Art Unit</b> 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/30/2004</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The IDS filed on September 30, 2004 is hereby acknowledged and has been placed of record. Please find attached a signed and initialed copy of the PTO 1449.

### ***Drawings***

2. The formal drawings were received on September 9, 2005. These drawings are acceptable.

### ***Minor Claim Suggestions By Examiner***

3. The following change(s) are recommended to improve clarity of the claims. The claims have been examined on the merits including the suggested changes below.

In claim 1, on line 4, "an liquid" should be replaced with --a liquid--

In claim 1, on line 4, --with-- should be inserted after "communicating"

In claim 1, on line 10, "vibration plate" should be replaced with --elastic plate--

In claim 4, on line 5, --with-- should be inserted between "communicating" and "a first"

In claim 4, on line 7, --with-- should be inserted between "communicating" and "a second"

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Kitagawa et al., USPN 6,796,637.

Kitagawa shows a layered piezoelectric vibrator (see Figures 8 and 9) for a liquid ejection head (see Figures 4 and 5), the liquid ejection head comprising: a liquid chamber (162); a nozzle orifice (154); a pressure generating portion (46, 146) communicating with the liquid chamber and the nozzle orifice, wherein the pressure generating portion communicates with the liquid chamber via a liquid supply port (158); and an elastic plate (66, 166), which defines a part of the pressure generating portion. Kitagawa also shows at least one embodiment of the piezoelectric vibrator comprising: a first common electrode (77) provided on a surface of the elastic plate (66) which is opposite to a surface facing the pressure generating portion and electrically connected to

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a common potential; a first piezoelectric layer (lower layer of 79) provided on the first common electrode; a drive electrode (73) provided on the first piezoelectric layer; a second piezoelectric layer (upper layer of 79) provided so as to cover the drive electrode; and a second common electrode (75) provided on the second piezoelectric layer and electrically connected to the common potential. Further, Kitagawa teaches the thickness of the piezoelectric layers being preferably between 3 to 10 micrometers (see column 10, lines 32-35). Further, as to the recitation regarding an inertance of the nozzle orifice and an inertance of the liquid supply port as being greater than an inertance of the pressure generating portion, in the absence of any expressly recited structural features or relationships that would result in such a relationship, it can reasonably be understood that such would be inherent with the liquid ejection head shown by Kitagawa.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagawa et al.

Kitagawa teaches the recitations set forth in claim 1, however specifically setting the inertance of the nozzle orifice and liquid supply port to be more than double the inertance of the pressure generating portion, is not expressly taught. Further the longitudinal dimension of the

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pressure chamber, the amount of deformation of the piezoelectric vibrator, the compliance of the piezoelectric vibrator compared to the compliance of the liquid, the volume of a liquid droplet ejected from the nozzle orifice, the ejection frequency of the liquid droplet, and the specific natural period of the pressure generating portion, are not expressly disclosed.

Such values and parameters as those recited in claims 3-9 can be found through routine experimentation and do not represent a patentable distinction from the apparatus shown by Kitagawa. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to design the liquid ejection head of Kitagawa having the recited values and parameters, in order to affect specific and desired liquid ejection results, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent to Junhua is cited as of interest.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darren W. Gorman whose telephone number is 571-272-4901. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on 571-272-4919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

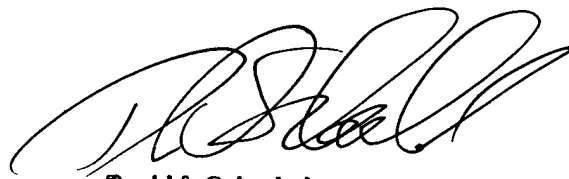
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Darren W Gorman  
Examiner  
Art Unit 3752

*DWG 2/23/06*

DWG  
February 23, 2006



**David A. Scherbel**  
**Supervisory Patent Examiner**  
**Group 3700**